[0053] **FIG. 7** illustrates an exemplary computer system **200** with the wireless communication device **100**. The computer system **200** is preferably housed in a small, rectangular portable enclosure. Referring now to **FIG. 7, a** general purpose architecture for entering information into the data management by writing or speaking to the computer system is illustrated. A processor **220** or central processing unit (CPU) provides the processing capability. The processor **220** can be a reduced instruction set computer (RISC) processor or a complex instruction set computer (CISC) processor. In one embodiment, the processor **220** is a low power CPU such as the MC68328V DragonBall device available from Motorola Inc.

[0054] The processor **220** is connected to a read-only-memory (ROM) **221** for receiving executable instructions as well as certain predefined data and variables. The processor **220** is also connected to a random access memory (RAM) **222** for storing various run-time variables and data arrays, among others. The RAM **222** is sufficient to store user application programs and data. In this instance, the RAM **222** can be provided with a back-up battery to prevent the loss of data even when the computer system is turned off. However, it is generally desirable to have some type of long term storage such as a commercially available miniature hard disk drive, or non-volatile memory such as a programmable ROM such as an electrically erasable programmable ROM, a flash ROM memory in addition to the ROM **221** for data back-up purposes.

[0055] The computer system **200** has built-in applications stored in the ROM **221** or downloadable to the RAM **222** which include, among others, an appointment book to keep track of meetings and to-do lists, a phone book to store phone numbers and other contact information, a notepad for simple word processing applications, a world time clock which shows time around the world and city locations on a map, a database for storing user specific data, a stopwatch with an alarm clock and a countdown timer, a calculator for basic computations and financial computations, and a spreadsheet for more complex data modeling and analysis. Additionally, project planning tools, and CAD/CAM systems, Internet browsers, among others, may be added to increase the functionality of portable computing appliances. Users benefit from this software, as the software allows users to be more productive when they travel as well as when they are in their offices.

[0056] The computer system **200** receives instructions from the user via one or more switches such as push-button switches in a keypad **224**. The processor **220** is also connected to a real-time clock/timer **225** that tracks time. The clock/timer **225** can be a dedicated integrated circuit for tracking the real-time clock data, or alternatively, the clock/timer **225** can be a software clock where time is tracked based on the clock signal clocking the processor **220**. In the event that the clock/timer **225** is software-based, it is preferred that the software clock/timer be interrupt driven to minimize the CPU loading. However, even an interrupt-driven software clock/timer **225** requires certain CPU overhead in tracking time. Thus, the real-time clock/timer integrated circuit **225** is preferable where high processing performance is needed.

[0057] The processor **220** drives an internal bus **226**. Through the bus **226**, the computer system can access data from the ROM **221** or RAM **222**, or can acquire I/O information such as visual information via a charged coupled device (CCD) **228**. The CCD unit **228** is further connected to a lens assembly (not shown) for receiving and focusing light beams to the CCD for digitization. Images scanned via the CCD unit **228** can be compressed and transmitted via a suitable network such as the Internet, through Bluetooth channel, cellular telephone channels or via facsimile to a remote site.

[0058] Additionally, the processor **220** is connected to the multi-mode wireless communicator device **100**, which is connected to an antenna **232**. The device **100** satisfies the need to access electronic mail, paging, mode/facsimile, remote access to home computers and the Internet. The antenna **232** can be a loop antenna using flat-strip conductors such as printed circuit board wiring traces as flat strip conductors have lower skin effect loss in the rectangular conductor than that of antennas with round-wire conductors. One simple form of wireless communication device **100** is a wireless link to a cellular telephone where the user simply accesses a cellular channel similar to the making of a regular voice call. Also mention that one channel is reserved for making voice calls. Typically, data channels are not usable for voice communications because of the latency and low packet reliability, so a dedicated voice channel is necessary. In one implementation, GPRS, there are a total of 8 channels per user, one of which is dedicated to voice when the user decides to make a voice call. This voice connection is independent of the data connection.

[0059] The processor **220** of the preferred embodiment accepts handwritings as an input medium from the user. A digitizer **234**, a pen **233**, and a display LCD panel **235** are provided to capture the handwriting. Preferably, the digitizer **234** has a character input region and a numeral input region that are adapted to capture the user's handwritings on words and numbers, respectively. The LCD panel **235** has a viewing screen exposed along one of the planar sides of the enclosure are provided. The assembly combination of the digitizer **234**, the pen **233** and the LCD panel **235** serves as an input/output device. When operating as an output device, the screen **235** displays computer-generated images developed by the CPU **220**. The LCD panel **235** also provides visual feedback to the user when one or more application software execute. When operating as an input device, the digitizer **234** senses the position of the tip of the stylus or pen **233** on the viewing screen **235** and provides this information to the computer's processor **220**. In addition to the vector information, the present invention contemplates that display assemblies capable of sensing the pressure of the stylus on the screen can be used to provide further information to the CPU **220**.

[0060] The CPU **220** accepts pen strokes from the user using the stylus or pen **233** that is positioned over the digitizer **234**. As the user "writes," the position of the pen **233** is sensed by the digitizer **234** via an electromagnetic field as the user writes information to the computer system. The digitizer **234** converts the position information to graphic data. For example, graphical images can be input into the pen-based computer by merely moving the stylus over the surface of the screen. As the CPU **220** senses the position and movement of the stylus, it generates a corresponding image on the screen to create the illusion that the pen or stylus is drawing the image directly upon the screen.